

REMARKS

Reconsideration of the application is requested.

Claims 14-31 remain in the application. Claims 14-31 are subject to examination. Claim 14 has been amended.

Under the heading "Claim Rejections – 35 USC § 103" on page 2 of the above-identified Office Action, claims 14-20, 30 and 31 have been rejected as being unpatentable over U.S. Patent No. 5,987,174 to Nakamura et al. in view of U.S. Publication No. 2004/0091133 to Monji under 35 U.S.C. § 103. Applicants respectfully traverse.

In its original form, claim 14 included an image-recording sensor having color encoding in partial areas thereof, and monochrome encoding in remaining areas thereof.

From the discussion below, it should be clear that the original limitations of claim 14 copied above are not taught by the cited prior art and would not have been suggested.

However, the claim has been amended to even more clearly specify that the image sensor has color encoding only in partial areas thereof. The claim has also been amended to even more clearly specify that the image sensor has monochrome encoding in all areas that are not color encoded.

Support for the changes is inherent in language of the original claim. However, additional support can be found by referring to Fig. 2, for example.

The Examiner has alleged that Nakamura et al. teach a sensor with color encoding in partial areas thereof, and that Monji teach monochrome encoding in remaining areas thereof. The Examiner then alleges that it would have been obvious to “modify the system disclosed by Nakamura to add monochrome coding as taught by Monji in order to perform efficient image processing”. The Examiner has made clear errors in evaluating the teachings in the cited prior art as well as in concluding that the claimed invention would have been suggested.

Nakamura et al. teach a sensor that includes a color CCD camera 202. The color CCD camera 202 provides signals to a color difference converter circuit 206, and an image processing section 402 further processes the signals (See column 8, line 41 through column 11, line 35). It is very clear that the entire CCD camera 202 is color encoded. The CCD camera 202 does not have color encoding only in partial areas thereof.

Monji teach an image pick-up device 3 that is a CCD for monochrome (See paragraph 26). An infrared light filter 2 has a comb-like structure and is placed in front of the image pick-up device 3. Note that the infrared light filter 2 does not color code the image pick-up device 3 in any way since infrared light is invisible light. Claim 1 of Monji also specifies that the image pick-up device has

rows that are sensitive to visible light and rows that are sensitive to invisible light. Clearly, Monji teaches a monochrome sensor having rows encoded to sense visible light and other rows encoded to sense invisible light.

In contrast to claim 14, Monji does not teach an image sensor that has color encoding only in partial areas thereof. As mentioned above, neither do Nakamura et al. Therefore, this claimed feature could not have possibly been suggested by the cited prior art.

Claim 14 now also more clearly specifies that the image sensor has monochrome encoding in all areas that are not color encoded. Nakamura et al. do not teach this feature since their entire CCD camera 202 is color encoded. Monji does not teach this feature since their image pick-up device 3 and infrared light filter 2 do not have any type of color coding at all. Rather, portions of Monji's sensor are sensitive to invisible light.

Neither reference teaches an image sensor that has color encoding only in partial areas thereof or an image sensor that has monochrome encoding in all areas that are not color encoded. Therefore, invention as defined by claim 14 could not have possible been suggested by Nakamura et al. and Monji.

Claims 15-18 place limitations on the partial areas defined in claim 14. As one example, claim 15 specifies that the partial areas with the color encoding are vertical stripes and/or areas on a right-hand image edge of said sensor. The

Examiner has made a clear error in alleging that Nakamura et al. teach the limitations in claims 15-19. The Examiner has referred to Figs. 3A, 3B and 6 of Nakamura et al. in alleging that the claimed limitations are taught. However, those figures are provided to explain a line extraction process that is performed by the image processing block 402 (See column 12, line 46 through column 14, line 24 and column 16, line 62 through column 17, line 28). Those figures do not relate to any type of color encoding that exists only in partial areas of their sensor.

Under the heading "Claim Rejections – 35 USC § 103" on page 4 of the above-identified Office Action, claims 21, 22, and 25 have been rejected as being unpatentable over U.S. Patent No. 5,987,174 to Nakamura et al. in view of U.S. Publication No. 2004/0091133 to Monji and further in view of U.S. Publication No. 2001/0052938 A1 to Itoh under 35 U.S.C. § 103. Applicants respectfully traverse.

The invention as defined by claims 21, 22, and 25 would not have been suggested for the reasons given above with regard to claim 14 and the teachings in Nakamura et al. and Monji.

Under the heading "Claim Rejections – 35 USC § 103" on page 6 of the above-identified Office Action, claims 23, 24, and 26 have been rejected as being unpatentable over U.S. Patent No. 5,987,174 to Nakamura et al. in view of U.S. Publication No. 2004/0091133 to Monji and further in view of U.S. Publication

No. 2002/0039142 A1 to Zhang under 35 U.S.C. § 103. Applicants respectfully traverse.

The invention as defined by claims 23, 24, and 26 would not have been suggested for the reasons given above with regard to claim 14 and the teachings in Nakamura et al. and Monji.

Under the heading “Claim Rejections – 35 USC § 103” on page 8 of the above-identified Office Action, claim 27 has been rejected as being unpatentable over U.S. Patent No. 5,987,174 to Nakamura et al. in view of U.S. Publication No. 2004/0091133 to Monji and further in view of U.S. Patent No. 5,221,963 to Hashimoto et al. under 35 U.S.C. § 103. Applicants respectfully traverse.

The invention as defined by claim 27 would not have been suggested for the reasons given above with regard to claim 14 and the teachings in Nakamura et al. and Monji.

Further, claim 27 specifies a ratio of monochrome coding to partial color encoding of the areas of an image sensor. Hashimoto et al. is unrelated to such a ratio, but rather teaches a specific gain in a non-linear correction circuit.

Under the heading “Claim Rejections – 35 USC § 103” on page 9 of the above-identified Office Action, claims 28 and 29 have been rejected as being unpatentable over U.S. Patent No. 5,987,174 to Nakamura et al. in view of U.S.

Publication No. 2004/0091133 to Monji and further in view of U.S. Publication No. 2003/0048493 A1 to Pontifex et al. under 35 U.S.C. § 103. Applicants respectfully traverse.

The invention as defined by claims 28 and 29 would not have been suggested for the reasons given above with regard to claim 14 and the teachings in Nakamura et al. and Monji.

It is accordingly believed to be clear that none of the references, whether taken alone or in any combination, either show or suggest the features of claims 14 or 30. Claims 14 and 30 are, therefore, believed to be patentable over the art. The dependent claims are believed to be patentable as well because they all are ultimately dependent on claims 14 or 30.

In view of the foregoing, reconsideration and allowance of claims 14-31 are solicited.

In the event the Examiner should still find any of the claims to be unpatentable, counsel would appreciate receiving a telephone call so that, if possible, patentable language can be worked out.

Please charge any fees that might be due with respect to Sections 1.16 and 1.17 to the Deposit Account of Lerner Greenberg Sterner LLP, No. 12-1099.

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Respectfully submitted,

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